

Generation Performance in Sri Lanka 2015



PUBLIC UTILITIES COMMISSION OF SRI LANKA



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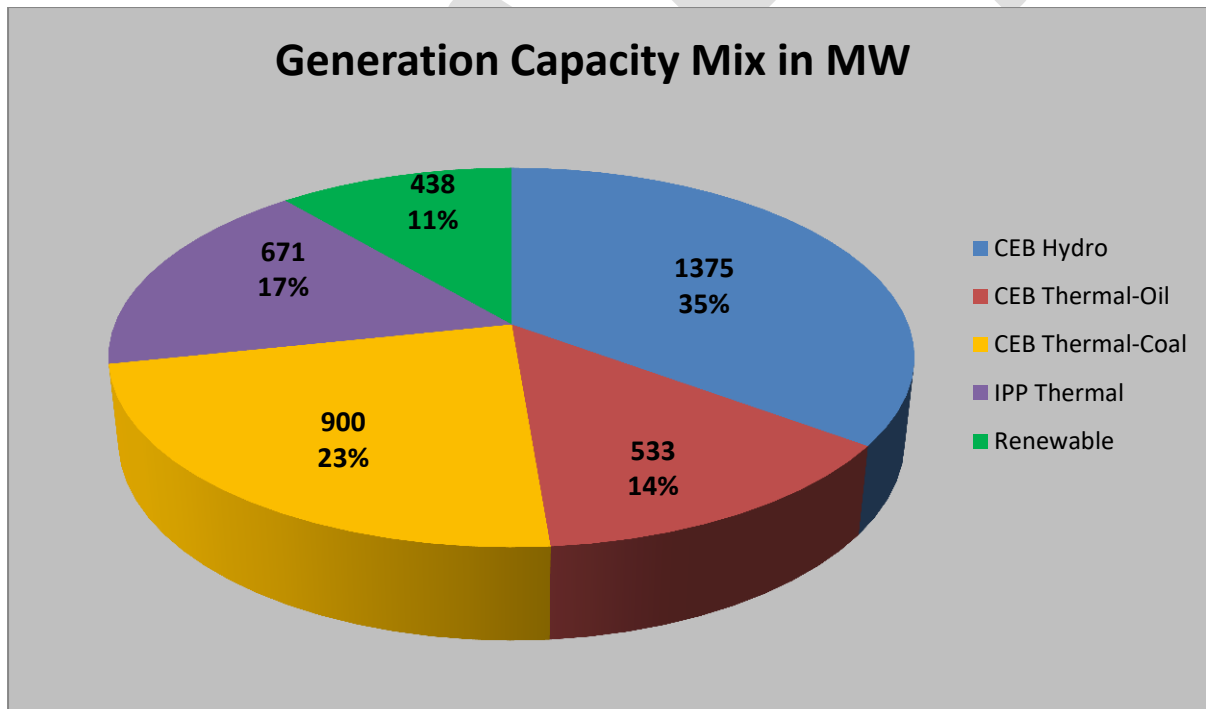
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1. Introduction

During year 2015, maximum recorded electricity demand in Sri Lanka was 2,210.4MW (excluding the contribution of SPP Mini Hydro, Solar and Biomass) which is 2.4% increase compared to the maximum demand of 2,151.7 MW in year 2014. In order to reach this demand and to cater the electricity requirement in Sri Lanka, altogether 222 Grid connected power plants with total installed capacity of about 3,809 MW have been operated in 2015. Out of these power plants 27 have been owned and operated by Ceylon Electricity Board including 17 hydro plants, 9 thermal plants and 1 wind power plant. Withal, 5 thermal power plants have been operated by Independent Power Producers (IPPs) and 182 renewable power plants have been operated by Small Power Producers (SPPs) including mini hydro plants, solar power plants, wind power plants and biomass power plants. Out of the above 18 renewable power plants have been commissioned during 2015. Also, the contract periods of ACE Embilipitiya and Colombo power plants were expired in April and June 2015, respectively. Barge power plant was procured by CEB and is commissioned operation as a CEB power plant from December 2015. Northern Power private power plant was not operated from January 2015 due to court order.

The chart below shows the existed installed capacities in MW of each type of power plants by the end year 2015.



This Generation Performance Report contains a summary of information and performance statistics of the generation units and electricity network in Sri Lanka for the year 2015.

All the indices and other calculations in this report are based on the data received through Licensee Information Submission System (LISS) and Monthly Review Reports submitted by System Control Center of CEB.

2. Energy Generation

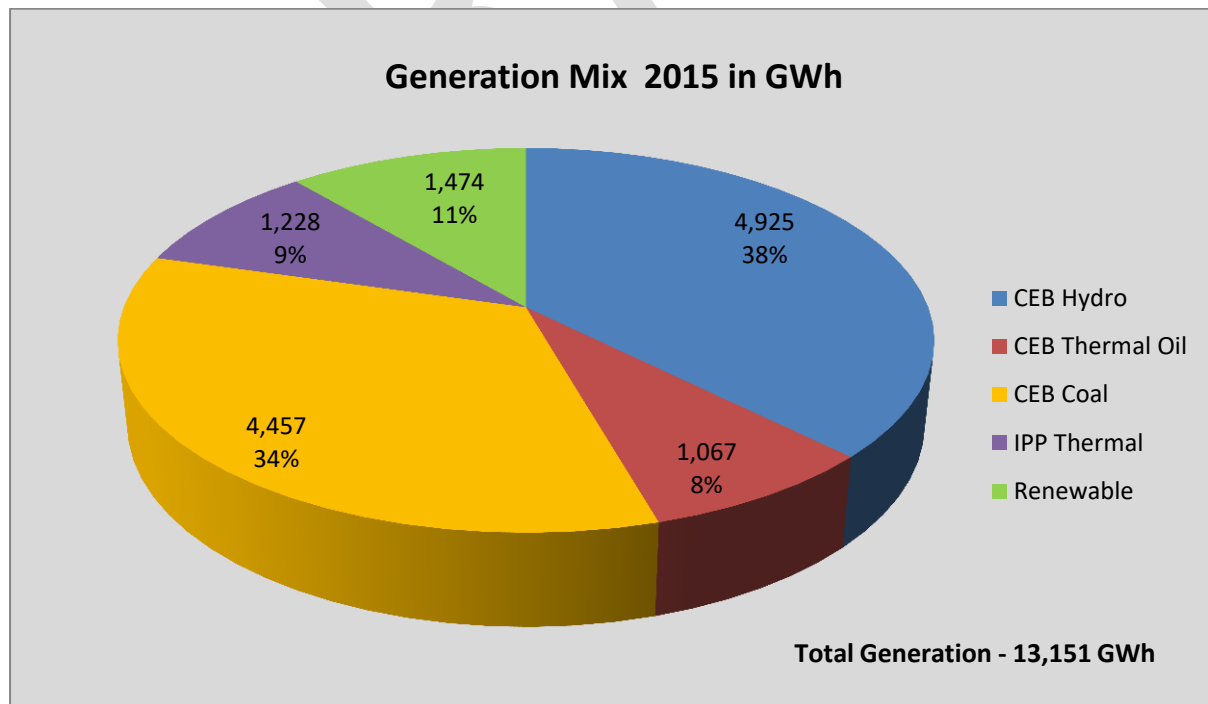
All grid connected generation plants sell their power to the Transmission Licensee in Sri Lanka to deliver the power to the consumers through Distribution Licensees.

The chart and graph below shows the annual generation figures in 2015 in GWh.

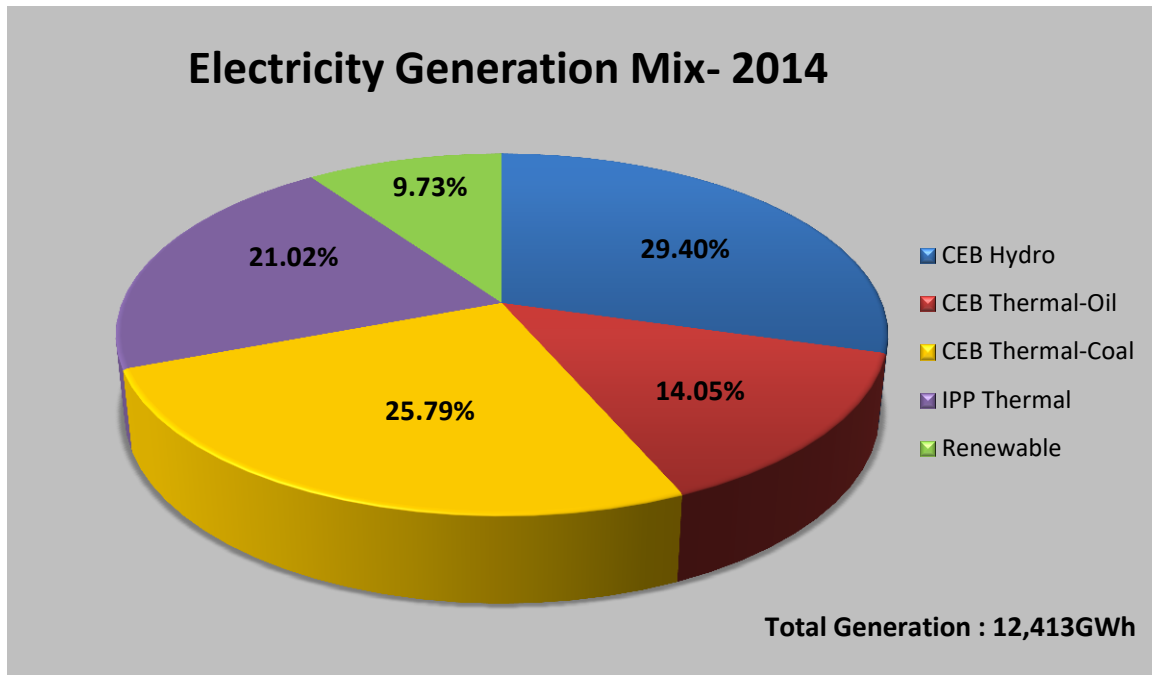
	CEB Hydro	CEB Oil	CEB Coal	IPP	Renewable	Total
Jan	499	24	393	31	95	1043
Feb	361	68	389	63	92	973
Mar	313	89	528	132	62	1124
Apr	382	40	484	30	96	1032
May	481	14	493	6	136	1131
Jun	326	119	380	140	140	1105
Jul	283	158	374	194	153	1163
Aug	277	176	295	266	137	1151
Sep	273	183	257	254	136	1103
Oct	445	123	330	82	149	1129
Nov	626	20	283	2	149	1080
Dec	659	54	251	26	129	1118
Total	4,925	1,067	4,457	1,228	1,474	13,151

Source :LISS

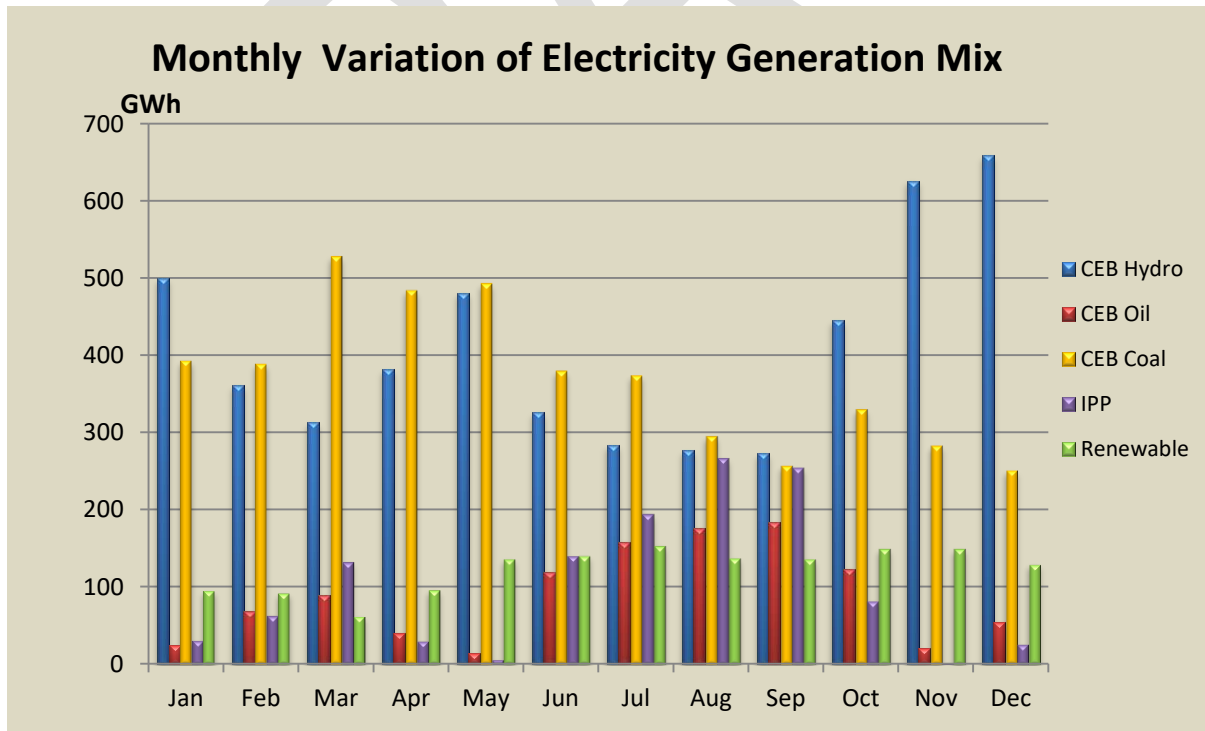
The chart below shows the generation mix of year 2015 in Sri Lanka.



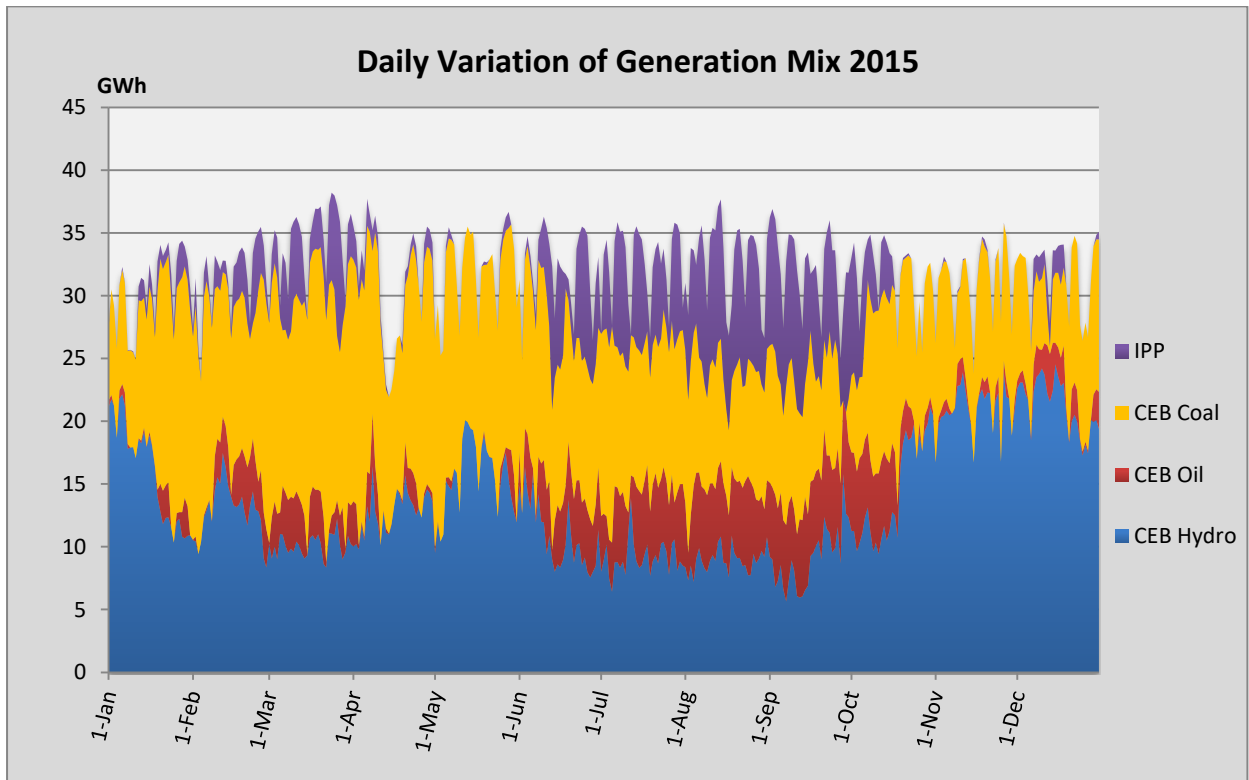
The chart below shows the generation mix of year 2014 in Sri Lanka.



The chart below shows the monthly variation of generation mix in Sri Lanka during year 2015.

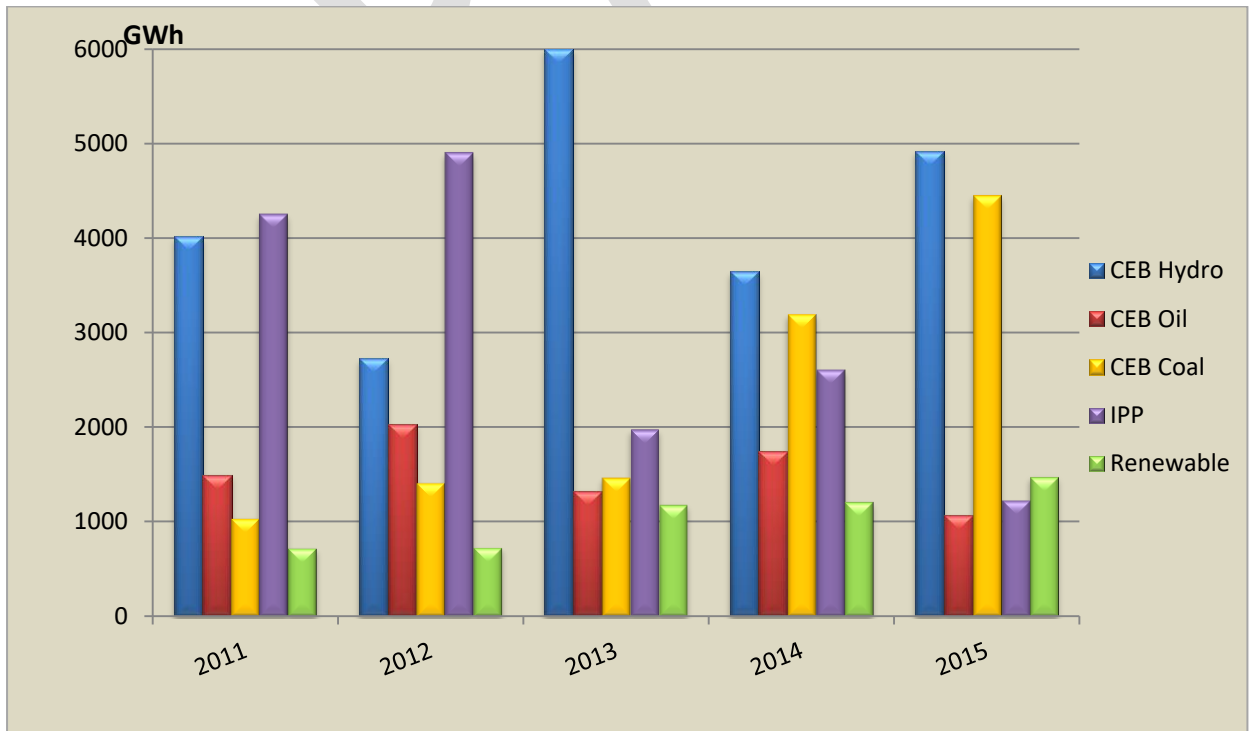


The following chart shows the daily variation of generation mix in Sri Lanka during year 2015.



Note: Daily generation data of renewable power plants is not included.

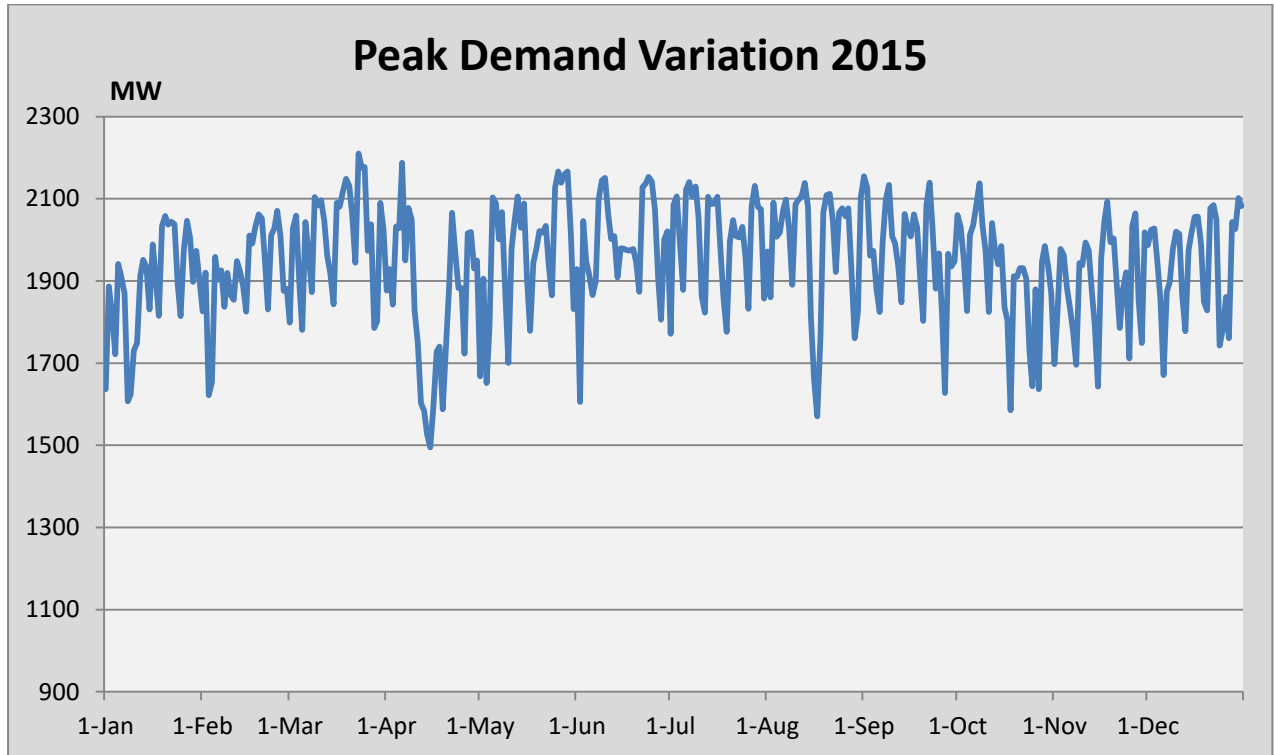
The following chart shows the variation of generation mix in Sri Lanka over the past few years.



3. System Peak Demand

CEB System Control records the daily peak power demand of the country.

Daily variation of country's system peak demand in the year 2015 is depicted by the following graph.



Highest Peak Demand: 2,210.4 MW on March 23, 2015

Lowest Peak Demand: 1,494.6 MW on April 15, 2015

Note: Contribution of SPP Mini Hydro, Solar and Biomass is not included for the peak demand.

4. Load Factor

Load Factor is an indicator which shows how steady an electrical load over time. It is simply the average load divided by the peak load in a system over a period of time. But normally load factor is calculated subjected to the produced energy according to the following formula.

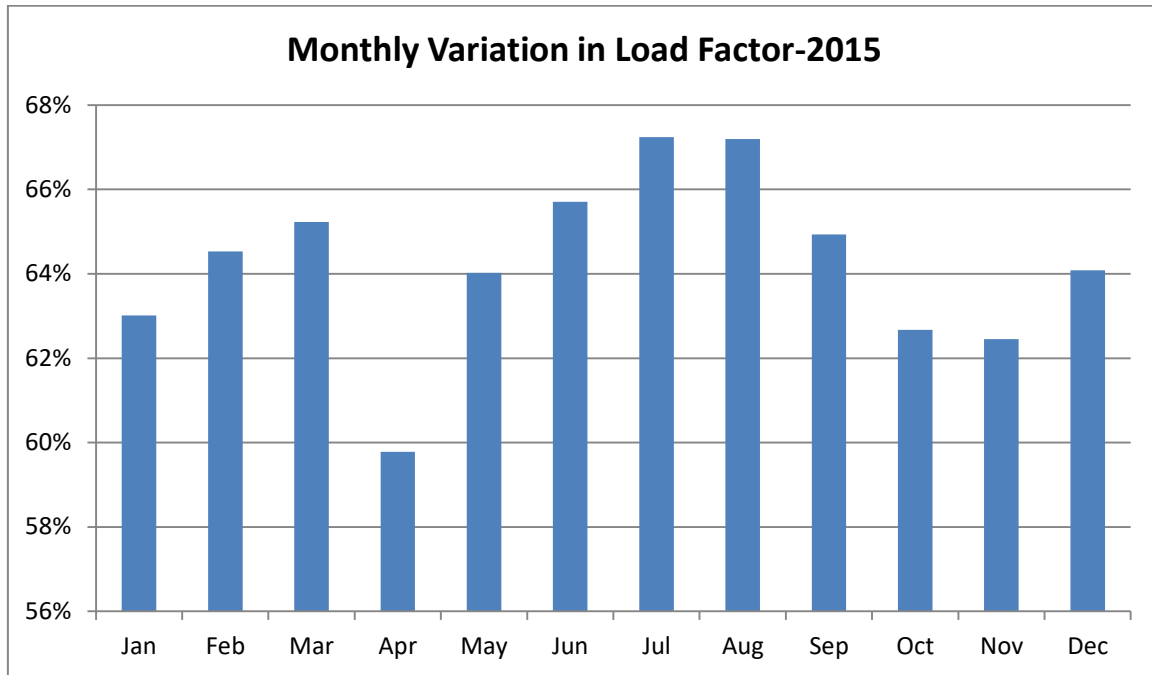
$$\text{Load Factor} = \frac{\text{Total Generation During the Nominal Period}}{\text{Maximum Demand} \times \text{No. of hours in the report period}}$$

Calculated Load Factor for the total system in year 2015 = **67.92%**

Calculated Load Factor for the total system in year 2014 = **60.88%**

Load factor of any system must be tried to keep in its maximum by pulling down the concentrated maximum demand and shifting the loads to periods of otherwise low usage. Load factor

maximization is essential in maintaining the security of supply of the countries in which, meeting the concentrated maximum demand is critical. Countries which have a flat load curve own a higher load factor.



Sri Lanka has a load curve with a steep peak in the night, where starting from about 6.00 pm the load grows to about 2,100 MW by 7.30 pm and starts falling off after about 08.30 pm. Therefore the system must be comprised a substantial additional generation capacity only to meet that abrupt sharp night peak; hence the load factor in Sri Lanka is comparatively low. As a solution for that, CEB has introduced a three tier tariff plan for the consumers of Industrial, Commercial and General Purpose tariff categories with low off peak rates and penal peak rates to smoothen the daily peak load and push some peak time activities to low demand hours. From 2015 onwards the time-of-use tariff scheme is available for three phase domestic customers also, as an option.

Note: Load Factors were calculated excluding NCRE contribution of SPP Mini Hydro, Solar and Biomass component of the system

5. Plant Factor

The plant factor of a power plant is the ratio of the actual energy output of the power plant over a period of time to its potential output if it had operated at full nameplate capacity the entire time.

Plant Factors vary greatly depending on the type of power plants and it is calculated according to the following formula.

$$\text{Plant Factor} = \frac{\text{Actual Energy Production During the Nominal Period}}{\text{Potential Energy Production During the Period}}$$

[Generation Performance in Sri Lanka -2015]

Calculated plant factors for all grid connected power plants in Sri Lanka during year 2015 are listed below.

Plant	Capacity (MW)	Annual Generation (GWh)	Plant Factor
CEB Hydro			
Wimalasurendra	50	131	30.0%
Old Laxapana	53.5	315	67.1%
Canyon	60	137	26.1%
New Laxapana	116	476	46.9%
Polpitiya	75	389	59.1%
Kotmale	201	480	27.3%
Victoria	210	795	43.2%
Randenigala	122	435	40.7%
Rantambe	49	213	49.6%
Ukuwela	40	155	44.2%
Bowatenna	40	64	18.4%
Upper Kotmale	150	495	37.7%
Samanalawewa	120	425	40.4%
Kukule	70	336	54.8%
Inginiyagala	11.25	45	45.5%
Udawalawe	6	21	40.8%
Nilambe	3.2	13	45.5%
CEB Thermal-Coal			
Puttalam Coal I	285	918	36.8%
Puttalam Coal II	285	1,745	69.9%
Puttalam Coal III	285	1,793	71.8%
CEB Thermal-Oil			
Uthura Janani	26.01	85	37.5%
Sapugaskanda B	69.6	166	27.3%
Sapugaskanda A	69.6	128	20.9%
Barge CEB	60	17	3.3%
KCCP	161	645	45.7%
KPS GT 7	113	24	2.4%
KPS Small GTs	65.2	1	0.2%
IPP			
Colombo Power	60	122	23.3%
Asia Power	50.8	99	22.4%
Northern Power	30	0	0.1%
Westcoast	270	652	27.6%
AES - Kelanitissa	163	259	18.1%
ACE Embilipitiya	100	95	10.8%

Plant Factors of NCRE Power Plants

Mini Hydro	
Wee Oya MHP	72%
Batatota MHP	72%
Rakwana Ganga MHP	70%
Somerset MHP	66%
Loggal Oya MHP	65%
Kirkoswald MHP	65%
Lenadora MHP	64%
Palmerston MHP	64%
Rathganga MHP	63%
Green Energy (Kiriweldola) MHP	63%
Gomala Oya MHP	61%
Waverly MHP	60%
Koladeniya MHP	58%
Kaduruwan Dola Athuraliya MHP	58%
Ranmudu Oya MHP	57%
Ritigaha Oya I MHP	57%
Amanawala Oya MHP	57%
Badulu Oya MHP	57%
Kehelwatta MHP	56%
Mulgama MHP	56%
Hapugastenna - 1 MHP	55%
Watawala B Estate MHP	55%
Bambarabotuwa III MHP	54%
Rajjammana MHP	53%
Erathna (Waranagala) MHP	53%
Watakelle MHP	52%
Denawak Ganga MHP	52%
Giddawa MHP	52%
Kokawita 1 MHP	52%
Asupiniella MHP	52%
Sheen MHP	52%
Kotanakanda MHP	51%
Belihul Oya Oya MHP	51%
Magal Ganga MHP	50%
Hapugastenna - 2 MHP	50%
Bopekanda MHP	50%
Bogandana MHP	50%
Punugala MHP	50%
Gampola Walakada MHP	50%

Lower Neluwa MHP	49%
Wembiyagoda MHP	49%
Waltrim MHP	49%
Delta MHP	49%
Alupola MHP	49%
Guruluwana MHP	48%
Madugeta MHP	48%
Coolbawn MHP	48%
Sithagala MHP	48%
Theberton MHP	48%
Mille Oya MHP	48%
Soranathota MHP	47%
Ritigaha Oya II MHP	47%
Barcaple II MHP	47%
Upper Hal Oya MHP	47%
Lemastota MHP	47%
Kandadola MHP	46%
Kotapola (Kiruwana) MHP	46%
Werapitiya MHP	45%
Bowhill (Kadiyanlena) MHP	45%
Ross State MHP	45%
Maduruoya II MHP	44%
Lower Hemingford MHP	44%
Gangaweraliya MHP	43%
Seetha Eliya MHP	43%
Bambarabatu Oya MHP	43%
Halathura Ganga MHP	43%
Lower Kotmale Oya MHP	43%
Bulathwaththa MHP	43%
Dick Oya MHP	43%
Miyawita Oya MHP	42%
Karawila Ganga MHP	42%
Kumburuteniwela MHP	42%
Pathaha MHP	42%
Manelwala MHP	42%
Upper Ritigaha Oya MHP	41%
Henfold (Agra Oya) MHP	41%
Watawala (Carolina ii) MHP	41%
Minuwanella MHP	40%
Dunsinane MHP	40%
Maduru Oya MHP	40%

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Barcaple I MHP	40%
Labuwewa MHP	38%
Kalupahana MHP	38%
Indurana MHP	38%
Monaraela MHP	37%
Kadurugal Dola MHP	37%
Devituru MHP	37%
Kabaragala MHP	36%
Huluganga MHP	36%
Maduruoya MHP	36%
Kadawala I MHP	35%
Upper Magal Ganga MHP	35%
Adavikanda MHP	35%
Way Ganga MHP	35%
Upper Korawaka MHP	35%
Niriella MHP	34%
Ganthuna Udagama MHP	34%
Gurugoda Oya MHP	34%
Koswatta Ganga MHP	34%
Owala MHP	34%
Radella MHP	34%
Black Water MHP	33%
Galaboda (Denawak Ganga) MHP	33%
Kehelgamu Oya MHP	33%
Atabage Oya MHP	32%
Kiriwan Eliya MHP	32%
Kudah Oya MHP	31%
Branford MHP	31%
Aggra Oya MHP	31%
Wellawaya MHP	30%
Nandurana MHP	30%
Battalagala MHP	30%
Thebuwana MHP	29%
Maha Oya MHP	29%
Deiyanwala MHP	29%
Maa Oya MHP	29%
Galatha Oya MHP	28%
Rideepana MHP	28%
Nugedola MHP	28%
Falcon Valley MHP	28%
Stellenberg MHP	27%

Demodara II MHP	27%
Kalupahana Oya MHP	26%
Lower Atabage MHP	25%
Baharandha MHP	25%
Dunsinane Cottage MHP	24%
Kudawa Lunugalahena MHP	24%
Brunswic MHP	23%
Forest Hill MHP	23%
Pathanahenagama MHP	23%
Gonagamuwa MHP	23%
Kolonna MHP	23%
Nakkawita MHP	22%
Rakwana Ganga II MHP	22%
Lower Atabage Oya II MHP	21%
Sanquahar MHP	20%
Gampola MHP	20%
Bowhill MHP	19%
Nilambe Oya MHP	17%
Kolapathana MHP	17%
Malpel Dola Owala MHP	14%
Mul Oya MHP	12%
Naya Ganga MHP	10%
Kalugala-Pitawala MHP	10%
Kadawala I MHP	9%
Glassaugh MHP	7%
Mandagal Oya MHP	2%
Batugamma MHP	1%
Bambarabotuwa II MHP	0%
Carolina MHP	0%
Delgoda MHP	0%
Ellapita Ella MHP	0%
Gammaduwa MHP	0%
Weddemulle MHP	0%
Andaradeniya MHP	Not Available
Dikkanda MHP	Not Available
Ritigala oya MHP	Not Available

Wind	
Madurankuliya WPP	46%
Valimunai WPP	39%
Puloppalai WPP	39%
Nirmalapura WPP	35%
Mampuri II WPP	31%
Erumbukkudal WPP	31%
Vidatamunai WPP	29%
Kalpitiya WPP	28%
Musaipetti WPP	26%
Mampuri WPP	26%
Seguwantivu WPP	25%
Mampuri III WPP	21%
Uppudaluwa WPP	21%
Ambewela WPP	12%
Willwind WPP	10%

Bio Mass	
Bathalayaya BMP	80%
Badalgama BMP	31%
Ninthaur BMP	20%
Tokyo BMP	17%
Embilipitiya BMP	3%
Kottamurichchana BMP	0%

Solar	
Gonnoruwa I SPP	18%
Gonnoruwa II SPP	17%
Tirappane SPP	0.04%
Solar PV SPP	0.0%

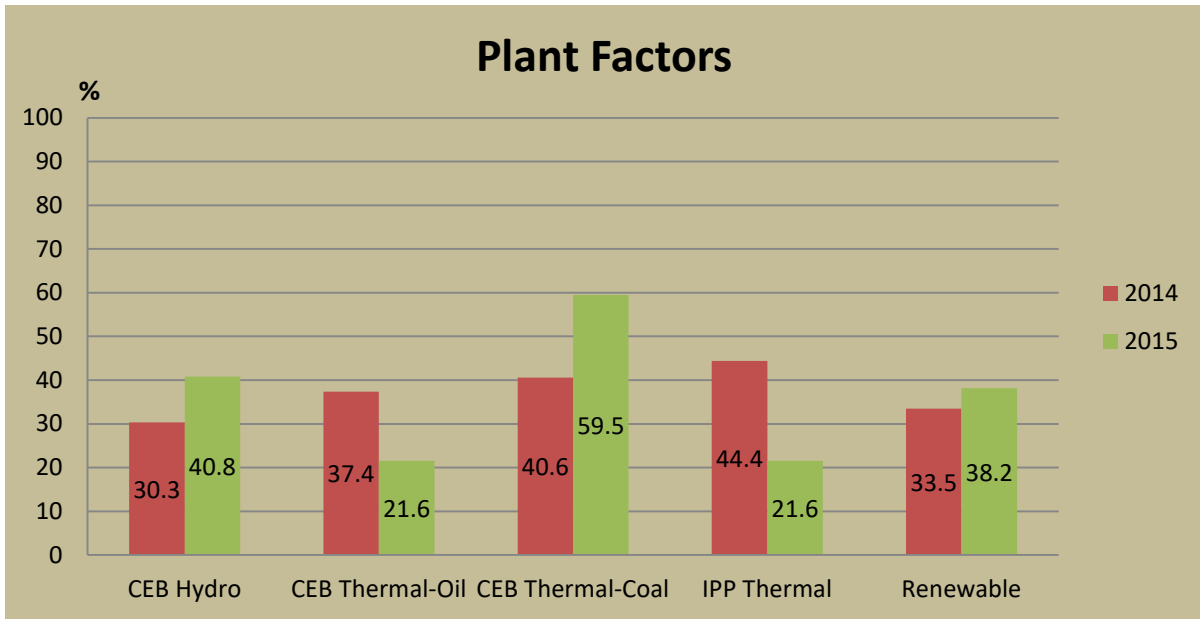
MHP- Mini Hydro Plant

WPP- Wind Power Plant

BMP- BiomassPlant

SPP- Solar Power Plant

Annual Overall Plant Factors for the major types of generation options in 2014 & 2015 are given below.



Overall plant factors of CEB hydro plants and Renewable plants were increased due to higher rainfall in 2015 compared to 2014. This has caused the thermal oil based generation in 2015 to be lower than 2014.

6. Running Plant Factor

The running plant factor of a generation unit is the ratio of the actual energy output of a generation unit over a period of time to its potential output if it had operated at full nameplate capacity during the period in which it has been operated.

Running Plant Factor shows the extent to which the generation units have been operated when they are running out of their nominal capacities.

Calculated running plant factors for CEB owned generation units in year 2015 are listed below.

CEB Hydro

Plant	Unit	Running PF	Plant	Unit	Running PF
Canyon	1	68%	Upper Kotmale	1	79%
	2	59%		2	82%
Wimalasurendra	1	69%	Kotmale	1	63%
	2	69%		2	66%
New Laxapana	1	48%		3	69%
	2	48%	Randenigala	1	87%
Old Laxapana	1	90%		2	89%
	2	86%	Rantmbe	1	89%
	3	89%		2	89%
	4	76%	Samanalawewa	1	66%
	5	75%		2	80%
Polpitiya	1	65%	Kukule	1	92%
	2	57%		2	95%
Ukuwela	1	94%	Inginiyagala	1,2,3,4	21%
	2	95%		Udawalawe	1,2,3
Bowatenna		47%	Nilambe		1,2
Victoria	1	67%			
	2	75%			
	3	71%			

CEB Thermal

Plant	Unit	Running PF				
Kalanithissa Gas Turbines	1	65%		8	82%	
	2	67%		9	86%	
	4	54%		10	82%	
	5	59%		11	84%	
	7	64%		12	85%	
Kalanithissa Combined Cycle	GT	88%		Lakvijaya	1	82%
	ST	96%			2	74%
Sapugaskanda	1	70%			Uthuru Janani	3
	2	67%		1		98%
	3	61%		2		98%
	4	78%		3	99%	
Sapugaskanda Extension	5	79%	Barge	1	99.7%	
	6	84%		2	95%	
	7	84%		3	97%	
				4	88%	

IPP

Colombo Power (Barge)	100%
ACE Embilipitiya	93%
Asia Power	96%
AES Kelanitissa	92%

Note: Running Plant Factors for some IPPs and all SPPs were not calculated since the operation durations of those plants were not available.

7. Generation Cost

Power Station	Annual Generation (GWh)	Total Cost to CEB (Mn.LKR)	Average Unit Cost(Rs/kWh)
Asia Power	99	4,219	42.42
AES Kelanitissa	259	5,873	22.67
Colombo Power	122	2,833	23.18
ACE Embilipitiya	95	2,211	23.39
Westcoast	652	23,706	36.35
Northern Power	0.38	709	1858.78
Sapugaskanda A	128	5,078	86.10
Sapugaskanda B	166	6,107	389.76
Kelanitissa Small GTs	1.06	1,053	1900.49
Kelanitissa PS GT 7	24	2,366	262.72
Kelanitissa CCY	645	18,563	29.75
Puttalam Coal	4,457	36,696	7.63
Uthura Janani	85	2,957	30.35
Barge-CEB	17	319	30.35
Victoria	795	2,492	3.17
Ukuwela	155	679	4.30
Kotmale	480	2,148	6.20
Upper Kotmale	495	1,780	5.05
Randenigala/Rantambe	648	1,839	2.58
Bowatenna	64	506	8.23
Nilambe	13	121	9.42
Old Laxapana/New Laxapana	791	1,506	1.86
Polpitiya	389	558	1.45
Wimalasurendra	131	406	3.03
Canyon	137	812	5.23
Samanalawewa	425	1,957	4.10
Kukule	336	807	3.22
Inginiyagala	45	156	2.90
Udawalawe	21	136	4.90
Renewable	1,474	24,591	16.97
All Hydro	4,925	15,905	3.23
All CEB Thermal	5,524	73,139	13.24
ALL IPP Thermal	1,228	39,551	32.21
All Plants	13,151	153,186	11.65

Source: LISS Data

Note: Loan installment cost component is not included in the cost figure of Puttalam Coal plant

7.1 Amount Paid in Excess of Capacity and Energy Charges

CEB has paid to Independent Power Producers (IPP) in excess of capacity and energy charges according to their Power Purchase Agreements (PPA). The amounts which have been paid are summarized below.

Power Plant	Start/Stop Charge (Mn.LKR)	Reimbursement Claim (Mn.LKR)	O & M Charge (Mn.LKR)	Total (Mn.LKR)
Asia Power	99.9988	91.3182		191.3170
AES - Kelanitissa	182.1584	54.6633		236.8217
Colombo Power - Barge	43.1818	272.3322		315.5140
ACE Power- Embilipitiya	40.6692	63.3747		104.0438
Westcoast	345.4344	500.2643		845.6987
Northern Power	0.0000	2.1717	1.0842	3.2560
Total (Mn.LKR)	711.4426	984.1244	1.0842	1696.6512

8. Comparison of Scheduled Dispatch and Actual Dispatch

CEB implements a generation dispatches schedule every 6 months prior to operation. It contains the amount of energy to be produced by each power plant for the forthcoming months. Due to numerous reasons the actual dispatch could be deviated from this schedule and, the comparison between actual and scheduled dispatches for the year 2015 is given below.

	Capacity MW	Scheduled GWh	Actual GWh	Variation GWh	Scheduled PF	Actual PF
Puttalam Coal	900	4,683	4,457	(226)	59.4%	56.5%
Sapugaskanda B	72	264	166	(97)	41.8%	26.4%
New Chunnakam	24	176	85	(91)	83.8%	40.6%
Colombo Power Barge	60	253	122	(131)	97.0%	46.9%
ACE Embilipitiya	100	65	95	30	22.5%	32.8%
Sapugaskanda A	72	198	128	(71)	31.5%	20.2%
AES Kelanitissa	163	166	259	93	11.6%	18.1%
KPS CCY	165	745	645	(100)	51.5%	44.6%
ASIA Power	51	220	99	(120)	49.1%	22.3%
Northern Power	27	70	0	(70)	29.6%	0.2%
Westcoast	270	1,137	652	(485)	48.1%	27.6%
KPS GT 7	115	38	24	(14)	3.8%	2.4%
KPS Small GTs	85	5	1	(4)	0.7%	0.1%
CEB Barge	60	-	17	17	0.0%	39.2%
Total Grid Con. Thermal	2,164	8,020	6,752	(1,269)	42.3%	419.3%
Renewable energy	438	1,263	1,462	199	32.9%	38.1%
CEB Hydro	1,375	3,568	4,925	1,357	29.6%	40.9%
Total Generation	3,977	12,851	13,138	287	36.9%	37.7%

9. Auxiliary Consumption

Auxiliary system facility is a major part of a power generation facility and the auxiliary consumption of a power plant depends on its configuration, age and related technical parameters. Purpose of an auxiliary system is to supply power for its own electricity requirements.

Normally 0.5% - 2% of power generated is consumed for the auxiliary system in hydro plants while the auxiliary consumption in fossil fuel power plants is 7% - 15% since there are different equipment like feed pumps, cooling water pumps, air fans, coal grinding mills, ash handling equipment etc. utilized in thermal plants.

Calculated percentages of auxiliary consumption of power plants out of gross generation during 2015 are as follows.

CEB Hydro	
Canyon	0.35%
Wimalasurendra	0.32%
New Laxapana	0.32%
Old Laxapana	0.20%
Polpitiya	0.25%
Ukuwela	0.32%
Bowatenna	0.54%
Victoria	0.20%
Upper Kotmale	0.36%
Kotmale	0.42%
Randenigala	0.54%
Rantambe	0.85%
Samanalawewa	0.82%
Kukule	1.01%
Inginiyagala	0.34%
Udawalawe	2.07%
Nilambe	0.08%

CEB Thermal*	
KPS Small GTs	13.1 %
Puttalam Coal	9.3 %
Sapugaskanda B	8.0 %
KPS GT 7	5.2 %
Sapugaskanda A	4.3 %
Uthura Janani	2.9 %
KPS CCY	2.3 %

*Due to unavailability of data only first 6 months data is used for the calculation

IPP Thermal	
ACE Embilipitiya	4.3 %
Westcoast**	3.4 %
Colombo Power	3.3 %
Asia Power	2.04%
AES Kalanithissa	2.85%

**Due to unavailability of data for Westcoast plant, only first 6 months data is used for the calculation

10. Availability Factor

The evaluation of availability of a power plant is one of the most important tasks at any power station. To analyze plant availability performance, generation unit outages should be scrutinized to identify the causes of unplanned or forced energy losses and to reduce the planned energy losses. Reducing outages increases the number of operating hours, therefore increases the plant availability factor.

Availability Factor of a generation plant can be calculated using the formula given below.

$$\text{Availability Factor} = \frac{\text{Duration in which the generation unit was available for operation}}{\text{Total length of the period}}$$

Total Availability Factor for all CEB generation Units in 2015 = 79%

Availability Factor for CEB hydro generation units in 2015 = 87%

Availability Factor for CEB thermal generation units in 2015 = 71%

Availability Factor for CEB wind generation units in 2015 = 11%

Availability Factor for all IPP generation units in 2015 = 96% (without maintenance hours)

Calculated availability factors for CEB owned generation plants in 2015 are listed below.

CEB Hydro

Plant	Unit	Availability factor
Canyon	1	98.4%
	2	77.1%
Wimalasurendra	1	89.7%
	2	97.5%
New Laxapana	1	97.4%
	2	96.9%
Old Laxapana	1	94.9%
	2	98.3%
	3	97.9%
	4	75.5%
	5	71.9%
Polpitiya	1	97.5%
	2	97.6%
Ukuwela	1	87.2%
	2	92.0%
Bowatenna		73.8%
Victoria	1	98.7%
	2	80.4%

Plant	Unit	Availability factor
Upper Kotmale	3	87.7%
	1	93.8%
Kotmale	2	90.2%
	1	95.4%
	2	92.5%
Randenigala	3	72.1%
	1	97.1%
	2	98.2%
Rantmbe	1	89.5%
	2	92.1%
Samanalawewa	1	98.3%
	2	63.5%
Kukule	1	93.7%
	2	67.5%
Inginiyagala	1,2,3,4	67.0%
Udawalawe	1,2,3	45.2%
Nilambe	1,2	91.8%

CEB Thermal

Plant	Unit	Availability factor	Plant	Unit	Availability factor
Kalanithissa Gas Turbines	1	92.2%		8	48.3%
	2	72.0%		9	33.1%
		100.0%		10	44.2%
	4	96.5%		11	47.5%
	5	88.1%		12	44.3%
	7	82.4%		Lakvijaya	1
	Kalanithissa Combined Cycle	GT	82.9%		2
ST		76.7%	3		91.9%
Sapugaskanda	1	60.5%	Uthuru Janani	1	88.0%
	2	62.0%		2	79.7%
	3	27.2%		3	93.8%
	4	65.1%	Barge	1	99.9%
Sapugaskanda Extension	5	22.3%		2	99.7%
	6	43.3%		3	99.8%
	7	50.7%		4	100.0%

IPP Thermal*

AES Kelanitissa	98.68%
Westcoast**	99.02%
Colombo Power	97.98%
ACE Embilipitiya	97.54%
Asia Power	88.01%

*Only forced outage data considered for the calculation of availability factor of IPP power plants

**Availability of Westcoast plant is based on data from January-June only.

11. Reservoir Storages

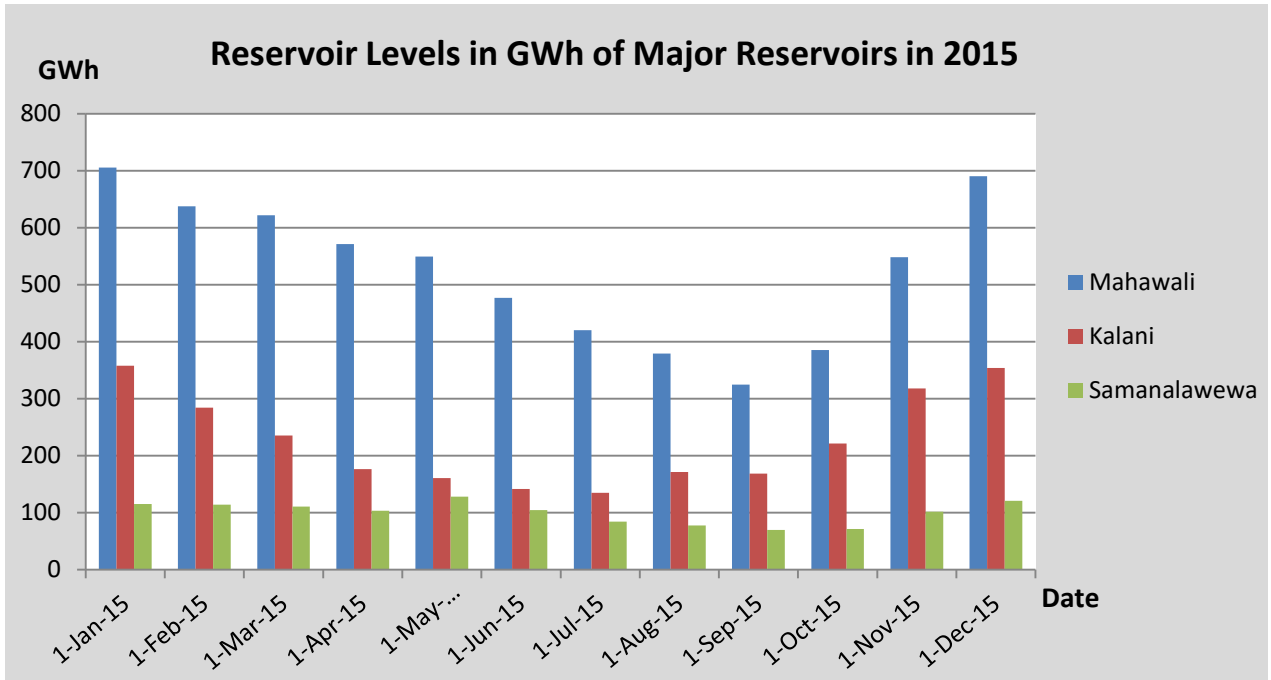
Hydro power is one of the major sources of electricity generation in the Sri Lanka and most of the large scale hydro projects have been developed by CEB. The capacity share of hydro power plants by end of 2015 is 37%. Also hydro power generation has contributed to 37% of the energy generation in 2015.

The major hydropower schemes already developed are associated with Kelani and Mahaweli river basins. Laxapana complex comprises five hydro power stations which have been built associated with the two main tributaries of Kelani River; Kehelgamu Oya and Maskeli Oya. Castlereigh and Moussakelle are the major storage reservoirs in the Laxapana complex. Mahaweli complex comprises seven hydro power stations and three major reservoirs; Kotmale, Victoria and Randenigala. In addition to above mentioned reservoirs Samanalawewa, which is on Walawe River,

is also can be considered as a large reservoir. And all the other small reservoirs which contribute to power up the run-of-river type plants are considered as ponds.

Therefore having a satisfactory capacity of water in these reservoirs throughout the year is essential to dispatch the hydro power to a significant amount.

The monthly variation of major reservoir storage levels in 2015 are depicted below.

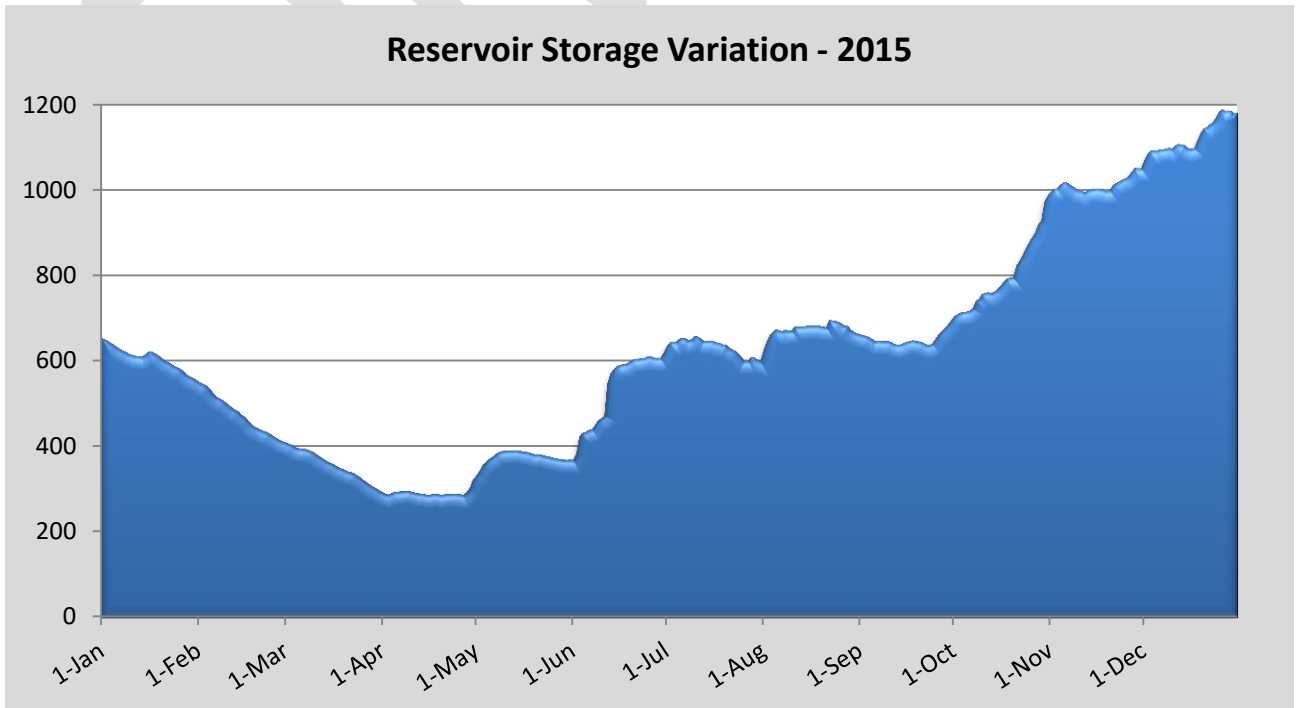


Total reservoir capacity in each complex

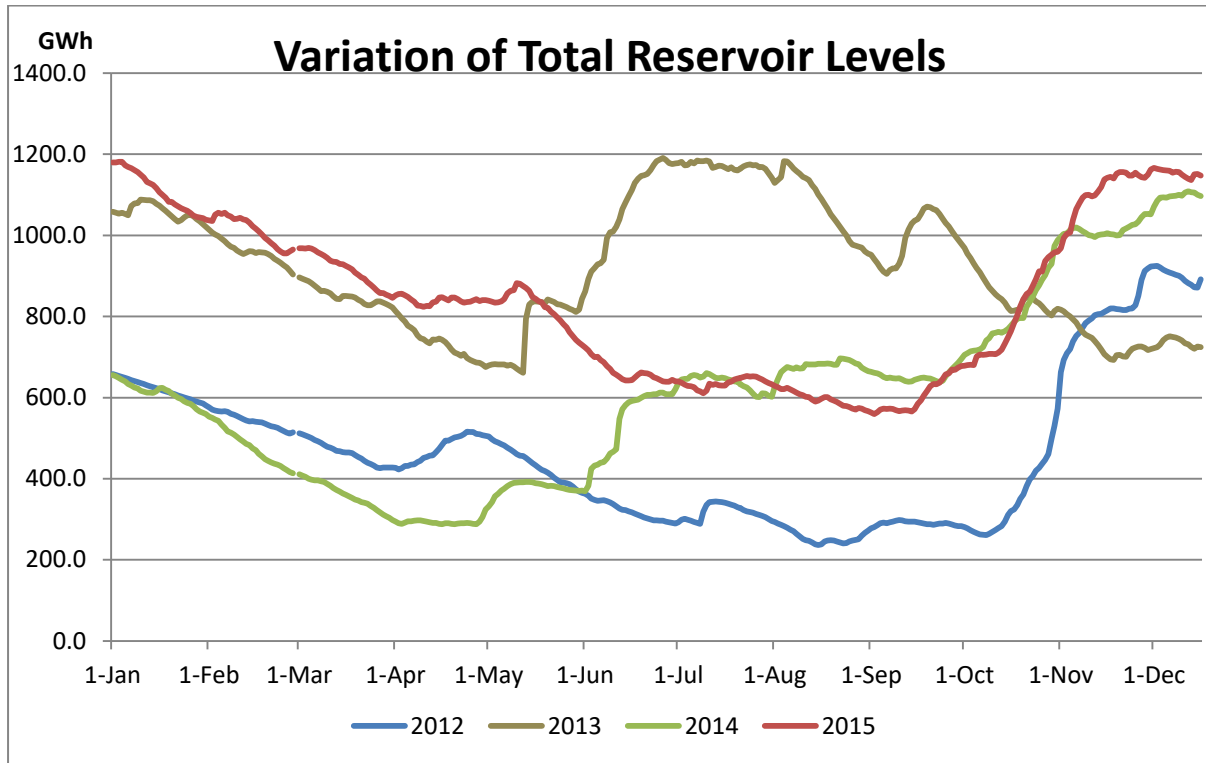
Mahaweli Complex: 717.8 GWh

Laxapana Complex: 367.8 GWh

Samanalawewa: 173.7 GWh



Note: Only Mahaweli, Laxapana and Samanalawewa Complexes’ reservoirs are considered in total reservoir storage profile.



12. Conclusion

Compared to the generation figures in year 2013, hydro generation contribution of 29% has been increased to 38% during year 2015 as a result of the good rainfall received throughout the year. The contribution of renewable energy component has increased by 1% from 2014 to 2015. Also coal power generation has been increased from 26% in 2014 to 34% in 2015.

The Report has described and calculated a number of key performance indicators for total generation system and individual generation plants operated in Sri Lanka. And it moreover gives a comparison of the generation statistics between years 2014 and 2015. The indicators for the present technical performance of the generation system are useful when planning the future developments and taking the corrective actions if necessary to improve the efficiency of generation.

Maximum electricity demand recorded in the year 2015 is 2,210.4 MW and is expected grow to 2,483 MW in 2016 as per the draft Long Term Generation Expansion Plan 2015-2034. To achieve this demand a firm system capacity of 3,310MW (excluding NCRE contribution) will be available during 2016. Therefore the estimated reserve margin in 2016 will be 33% at the peak demand, assuming that all the power plants are readily available to dispatch with their full capacities. But when it comes to the practical state it is obvious that all plants will not be available fully at every time.

However, even if the available dispatchable total capacity is dropped by 579 MW, the Reserve Margin can be maintained above 10%, which is the minimum allowed Reserve Margin by the Least-Cost Generation Expansion Planning Code.